

Recent Research on Weather Technology in the Cockpit Education and Training Issues

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Outline

- A short summary of Embry-Riddle research on education and training issues associated with General Aviation pilot usage of WTIC
 - Results of Weather Technology in the Cockpit pilot education and training study
- Recommendations and the way ahead

2009-present: Weather Technology in the Cockpit: Pilot Education and Training Issues

- 2009-2011: Joint study with University of North Dakota and University of Alaska-Anchorage
- UND task was to develop GA user needs statement
- UA-A task was to develop GA user concept of ops
- ERAU tasks:
 1. Conduct research necessary to define the minimum pilot training required to use WTIC systems safely and effectively
 2. Develop guidance for pilot training and evaluation criteria

Weather Technology In the Cockpit: Pilot Education and Training

First part of the research strategy involved examining current weather-related advisory circulars and weather knowledge exam questions

Research team categorized 649 questions from FAA Private, Instrument, Commercial, and Air Transport pilot exams into one of three weather knowledge categories and four levels of cognition

- **Knowledge categories:** Phenomenology, Hazard Products, Hazard Product Sources
- **Levels of Cognition:** Rote, Understanding, Application, Correlation (ref: Aviation Instructor’s Handbook, Figure 2-10)

Category / Cognition Level	Rote	Understanding	Application	Correlation	Total
Weather Phenomenology	65	227	42	19	353
Weather Hazard Products	94	146	17	2	259
Weather Hazard Product Sources	34	3	0	0	37
Total	193	376	59	21	649

Weather Technology In the Cockpit: Pilot Education and Training

Second part of the research strategy involved developing and evaluating an education/ training module focused on a specific WTIC product (NEXRAD) for a specific weather situation (convective)

Employed Instructional Systems Design (ISD) methodology

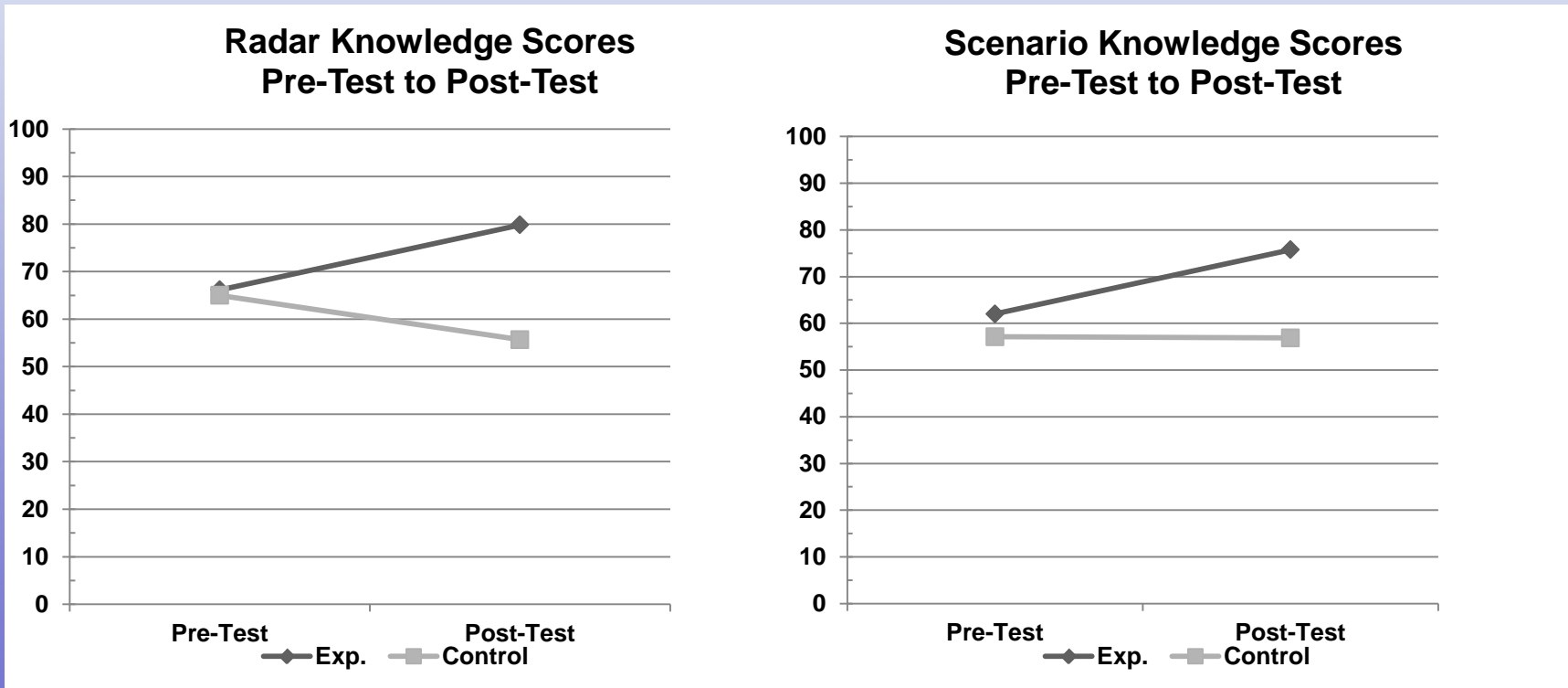
Tested on student pilots and flight instructors from Embry-Riddle's Flight Department during February-March 2011

Instructional sequence had four parts:

1. Pre-test on radar basics and products, including scenario-based questions
2. Formal education and training seminar
3. Post-test on radar basics and products, including scenario-based questions
4. Post-post-test designed to assess knowledge retention (scenario-based questions only)

Weather Technology In the Cockpit: Pilot Education and Training

Results of NEXRAD-based convective weather
education / training module testing



Recommendations and The Way Ahead

- Recommended to the FAA that weather-related Advisory Circulars need to be updated and reorganized
 - FAA is rewriting AC 00-63, *Use of Cockpit Displays of Digital Weather and Operational Information*
- Recommended to the FAA that Practical Test Standards and Knowledge Banks need to be updated
- The Way Ahead:
 - Develop Education & Training R&D roadmap for WTIC as it relates to the GA community (draft delivered Oct 2012)
 - Expand testing of NEXRAD convective weather module to larger, more representative group of GA pilots (three geographic regions, currently in planning)